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termine the constancy of the characters by which it is separated from *mucronata* forms of *M. vestita*. These are (a) larger number of sori in each valve, (b) greater length of peduncles, (c) uncinate upper tooth of the sporocarp.

(3) Determine the degree of fixity of characters in var. *tenuifolia* of *M. vestita*. No specimens are known to exist except those of Lindheimer and Wright, collected in 1848, and these seem to characterize a well-marked variety. The existence of a somewhat intermediate type in Reverchon's specimens distributed as *M. mucronata*, and the fact that the original form has not been sent in by recent collectors, seem to throw doubt upon the constancy of its characters, as does also the consideration that all the other distinguishing features insensibly grade into *mucronata* forms of *M. vestita*; hence, if it stands, it must stand on the basis of the narrow leaflets alone.

(4) Observe the relations and the cause of the markings on *M. picta*, Féé, from Mexico. It was claimed by the late Dr. Schaffner, who collected *Marsilia* at San Luis Potosí, that *M. picta* was the floating form of his *M. Höltingiana*, which we consider a depauperate form of *M. vestita*. Such a marked degree of variation would not seem to us impossible, as certain floating forms of *M. vestita* are as markedly in contrast with the usual forms of that species, if we except the "pictæ;" and Dr. Schaffner claimed that these were produced by infusoria and larvæ. Indeed, we have observed natant forms of *M. quadrifolia* in Bantam Lake that would present a no less difficult problem to the species-maker, if he were to observe them as herbarium specimens instead of in the field.

New Grasses.

BY GEORGE VASEY.

POA RUPESTRIS. Culms densely tufted, 6 to 9 inches high, erect and rigid, striate; caudine leaves (2 or 3) very narrow, erect, 1 to $1\frac{1}{2}$ inches long; ligule conspicuous, membranaceous; sheaths smooth, striate; upper part of culm naked; panicle $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, narrow, and sparsely flowered; branches short, single or in twos below, each with 3 to 5 spikelets, somewhat expanding in bloom; spikelets about three-flowered, $1\frac{1}{2}$

to 2 lines long, empty glumes oblong-ovate, acute, nearly as long as the flowering glumes, which are about $1\frac{1}{4}$ lines long, oblong, the marginal nerves and base slightly pubescent, otherwise smooth or minutely scabrous. Common in the Rocky Mountains, resembling small forms of *P. cæsia*. Collected by Wolf, Patterson, Letterman and others.

PANICUM HAVARDII. Culms 5 to 6 feet high, stout, leafy; leaves 1 to 2 feet long, thick, rigid, long acuminate, becoming involute, smooth or slightly hairy on the upper side near the ligule, which is a conspicuous ring of short hairs; panicle $1\frac{1}{2}$ feet long, smooth, diffuse, the branches 4 to 7 inches long, singly or in twos or threes, 1 to 2 inches apart, naked for the lower third, above numerously subdivided; spikelets 3 lines long; lowest glume half as long as spikelet, prominently five to seven-nerved, ovate; second glume 3 lines long, prominently nine-nerved, ovate, acuminate; third glume (that of the neutral flower) about equaling the second, five-nerved, its thick palet nearly as long; fourth glume (that of the fertile flower) about one-quarter shorter than the third; styles 2, ciliate tufted at apex.

Found by Dr. Havard in the Guadalupe Mountains of S. W. Texas, in 1881, and last season in Chihuahua by Mr. C. G. Pringle. I was at first inclined to consider it a variety of *P. virgatum*, but it seems well distinguished by its long, rigid leaves, its smoothness and peculiar gray color, by its conspicuous ligule, and the remarkably large, smooth spikelets.

Elongation of the Inflorescence in Liquidambar.

On page 435 of Master's Vegetable Teratology, it is stated that "M^M. Clos and De Schönenfeld have recorded the existence of a variety of the Sweet Chestnut, *Castanea*, in which the pistillate catkins were as long and bore nearly as many flowers as the staminate. This is stated to be of constant occurrence in some localities and to be accompanied by a diminished size of the fruits. A similar elongation has been observed in the Walnut, catkins of which have been seen bearing thirty to thirty-five large nuts." We have a similar elongation of the pistillate inflorescence to report in the case of the Sweet Gum, *Liquidambar styraciflua*, found at New Dorp, Staten Island. The cluster is over three inches long,